Dr. Robert V. Fox

An accomplished researcher in liquid natural gas technologies

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Education: Dr. Robert V. Fox received his B.S. bacteriology in 1986 from the University of Idaho. He received his M.S. in biochemistry in 1989 and his Ph.D. in chemistry in 2003 from the University of Idaho.

Licensing information

For information on licensing INL technologies such as those developed by Mr. Fox, contact the Lead Account Executive for Non-Nuclear Energy:

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Work experience: Dr. Fox began his INL career in January 1989 with the Biotechnology Department as an Associated Western University (AWU) postgraduate appointee directly after finishing his M.S. at the University of Idaho. Dr. Fox was hired into the chemistry department in December 1989 and currently holds a staff scientist position. In 1998 Dr. Fox began taking courses offered through the local branch campus of the University of Idaho and completed the Ph.D. in chemistry in April 2003.

Professional endeavors: Dr. Fox has expertise in the areas of process chemistry, analytical chemistry, separations science, and supercritical fluids. Dr. Fox is currently gaining experience in the areas of radiochemistry and geochemistry. Early in his INL career Dr. Fox was part of a team of scientists involved in replacing cyanide laden metal stripping/plating solutions with non-cyanide alternatives for the US Air Force. Dr. Fox also contributed to a team of scientists tasked with replacing chlorinated paint stripper formulations with non-chlorinated alternatives for the Air Force. Dr. Fox's interest in process chemistry and pollution prevention led him to the field of supercritical fluid chemistry early in 1992 where he actively contributed to development of several processes based on supercritical fluid technology. In 1995, Dr. Fox teamed with Dr. Dan Ginosar and formed the Supercritical Fluids Research Group within the Chemistry Department. As a founding member of the Supercritical Fluids Research Group Dr. Fox contributed to advances in heterogeneous catalysis in supercritical and near-critical fluid hydrocarbon solvents, use of supercritical fluids as a unique chemical reaction medium, and use of supercritical fluids for extraction of organic and inorganic materials from solid and liquid media.

Supercritical Fluid team members Drs. Harry Rollins and Chris Bunker introduced Dr. Fox to the art of molecular spectroscopy in supercritical fluids in 1997. Dr. Fox used his molecular spectroscopy skills to investigate metal complexation reaction phenomena in carbon dioxide for his Ph.D. dissertation titled "Complexation Reactions of Lanthanides in Supercritical Fluid Carbon Dioxide". Dr. Fox's molecular spectroscopy experience at supercritical fluid conditions has been put to use investigating formation of hydroxyl radical and peroxide in supercritical fluid water under high radiolytic fields. For that endeavor, Dr. Fox is currently teamed with INL and Idaho State University researchers studying supercritical fluid water chemistry at the Idaho Linear Accelerator Center in Pocatello. Dr. Fox's work in the area of supercritical fluids has most recently involved synthesis of nitroaromatic propellants and separation/extraction of energetic materials from process streams using liquid and near-critical carbon dioxide.

In 2001 Dr. Fox teamed with other INL researchers to investigate actinide metal complexation phenomena in INL soils under the auspices of the Environmental Systems Research and Analysis (ESRA) Program. A three-year investigation of actinide and fission product environmental chemistry led to peer-review articles and the unique opportunity to participate in sample collection and analysis of actinide-contaminated materials from Pit 9. Publications and reputation in the area of actinide and fission product chemistry recently presented Dr. Fox with the opportunity to bring Department of Homeland Security and Department of Defense work to the INL related to mitigating the effects of radiological weapons of terror.

Patents:

U.S. Patent No. 4,825,038 – Method for Controlling Gas Metal Arc Welding

U.S. Patent No. 5,275,327 – Integrated Optical Sensor

U.S. Patent No. 5,906,757 – Liquid Plasma Deposition Method and Apparatus

U.S. Patent No. 6,473,708 -- Device and Method for Self-verifying Temperature Measurement and Control

U.S. Patent No. 6,563,303 -- Methods and Computer Executable Instructions for Marking a Downhole Elongate Line and Detecting Same